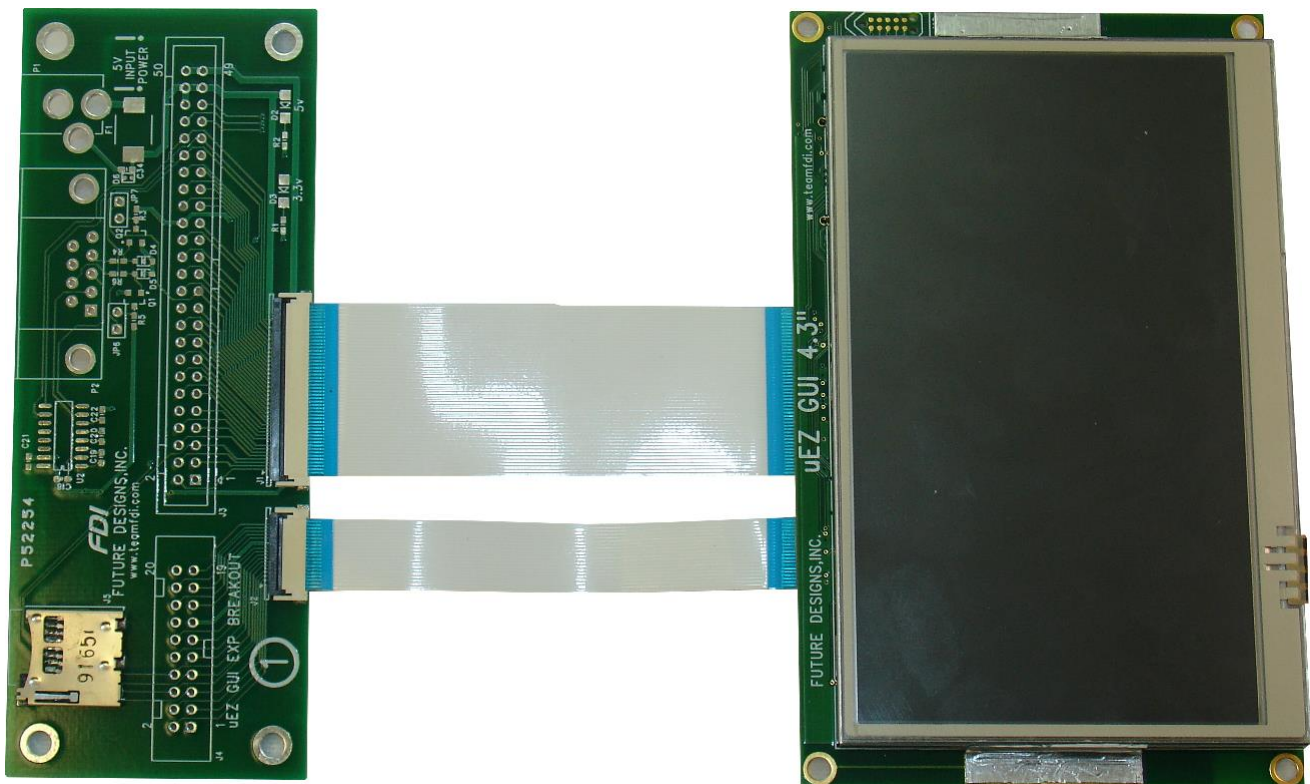
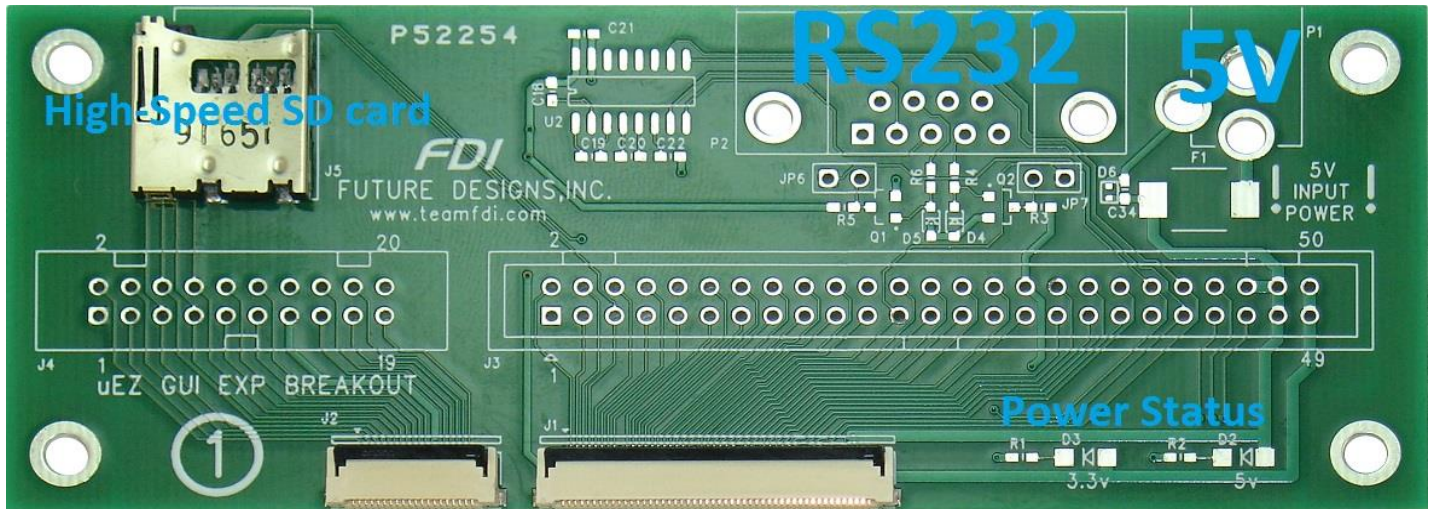


μEZGUI-EXP-BRKOUT User's Manual

Covers the following products:

μEZGUI-EXP-BRKOUT



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1. Introduction

The uEZGUI-EXP-BRKOUT is a quick and easy solution for rapid prototyping additional hardware with the uEZGUI family of products. The uEZGUI-EXP-BRKOUT offers a built-in high-speed microSD card slot and easy access to all 70 uEZGUI expansion pins.

2. Kit Contents (FDI PN: uEZGUI-EXP-BRKOUT)

- uEZGUI-EXP-BRKOUT development expansion board only

3. Functional Description

- High-Speed 4 bit microSD card(not supported on Renesas uEZGUIs)
- 70 Pin GPIO Expansion
- Optional RS232/RS485 Serial Communication
- Optional 5V Power Input
- Optional Power Status LEDs
- Ability to disconnect unused features

4. Requirements

The uEZGUI-EXP-BRKOUT does not come with the necessary flex cables. These must be purchased separately along with the purchase of a compatible uEZGUI kit. It is recommend to purchase multiple sets of flex cables as they break easily from repeated connections and disconnections. At this time, the uEZGUI-EXP-BRKOUT is compatible with uEZGUIs based on the following microcontrollers:

- NXP LPC1788 (part numbers starting with uEZGUI-1788)
- NXP LPC4088 (part numbers starting with uEZGUI-4088)
- NXP LPC2478 (part numbers starting with uEZGUI-2478)
- Renesas RX62N (part numbers starting with uEZGUI-RX62N)

Note that the 4-bit microSD card slot will only work with certain microcontrollers.

5. ESD Warning

Please see the website at <http://www.uezgui.com>



The uEZGUI-EXP-BRKOUT is shipped in a protective anti-static package. The kit must not be subjected to high electrostatic potentials. Damage may occur to the boards that will not be covered under warranty. General practice for working with static sensitive devices should be followed when working with the expansion board.

6. Expansion Connector Cable Details

The maximum length for the expansion connector cables is as follows:

General Purpose IO, TTL, Serial, etc = 6" recommended maximum, 8" absolute maximum

Ethernet, high-speed IO, etc = 3" recommended maximum, 4" absolute maximum

The following table provides example part numbers for the expansion cables:

Description	Mfg	Mfg PN	Digi-Key Pn
3" 20-pin 0.5mm	Molex	21020-0209	WM10226-ND
6" 20-pin 0.5mm	Molex	21020-0215	WM10218-ND
3" 50-pin 0.5mm	Molex	21020-7650	WM10231-ND
6" 50-pin 0.5mm	Molex	21020-0548	WM10223-ND

Note: These lengths are only recommendations. The actual lengths utilized will be dependent on the expansion board circuitry, layouts and general environment of the application. It is up to the customer to test and validate the functional operation and use of the expansion connectors.

7. Startup Procedure

To get started with the uEZGUI-EXP-BRKOUT, please connect the 50 pin and 20 pin FFCs to the uEZGUI as shown. The uEZGUI-RX62N-35QT does not support the 20 pin expansion. Take care not to damage the FFCs as they are very fragile.

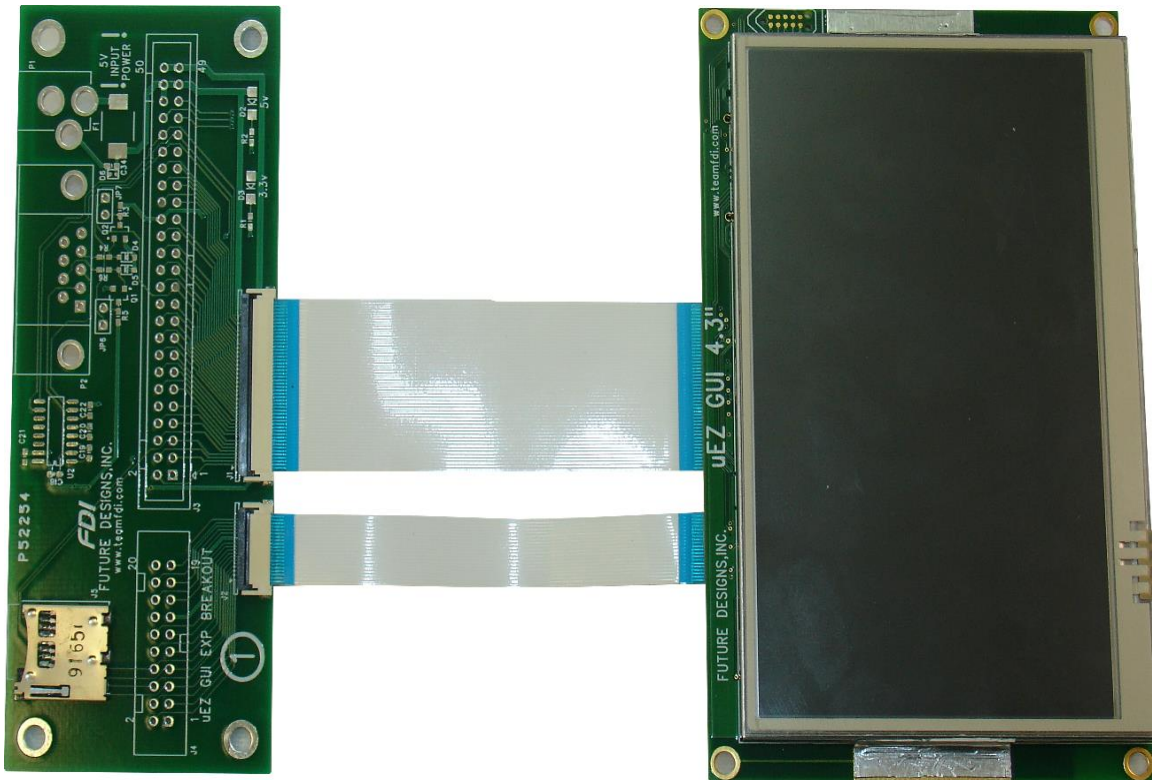


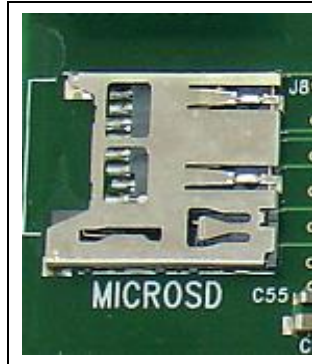
Figure 1 – uEZGUI-1788-43WQR with uEZGUI-EXP-BRKOUT

After connecting the cables, connect a 5V DC power supply (1A min) to the P1 on the EXP-BRKOUT or to the uEZGUI unit to power on the unit. At this time the high speed microSD card is only support on LPC1788 uEZGUI units. The out-of-the-box demo does not include the video player. This will need to be enabled inside of the project's Config_Build.h file.

8. I/O Connector Descriptions

MicroSD Socket J5

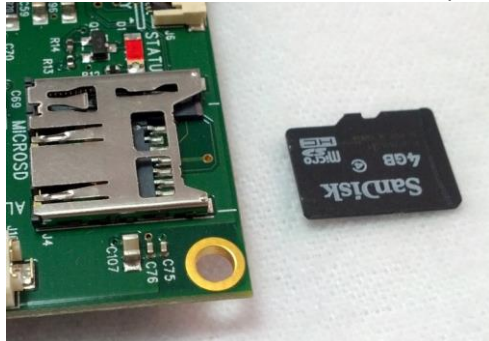
The UEZGUI-EXP-BRKOUT Board includes one 4 bit high speed microSDHC card.



Pin Number	Description
1	MCI DAT 2
2	MCI DAT 3
3	MCI CMD
4	3.3V
5	MCI Clock
6	Ground
7	MCI DAT 0
8	MCI DAT 1

WARNING: The microSD card must only be removed using the spring loaded “push-pull” mechanism on the microSD socket. Improper forceful removal of the microSD card will result in permanent damage to the socket that is not covered under warranty. To insert the card, just push it into the socket until a “click” sound is heard.

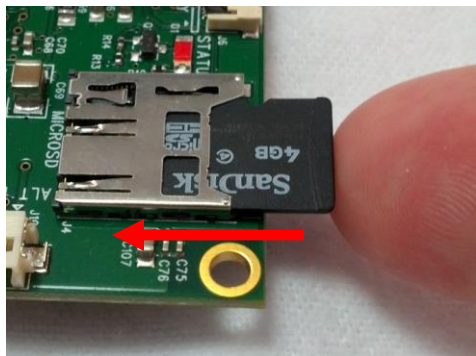
Start with the microSD card in this position relative to the microSD slot with the text and “lip” facing up.



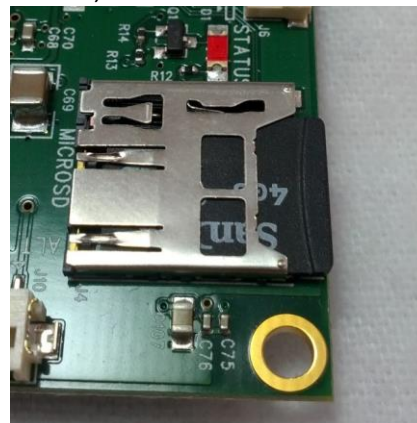
Next gently insert the card partially into the socket.



Use your finger to gently push the card into the socket until it clicks.

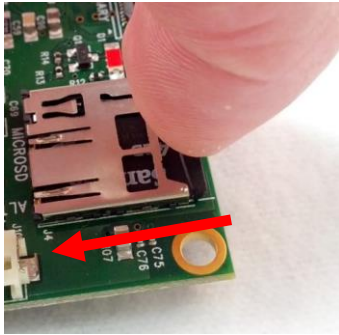


At this point the microSD card is fully inserted. It should not fall out, even if the unit is shaken vigorously.



To remove the microSD card, press the card back into the socket until another “click” sound is heard, then release pressure on the card. At this point, the card should be partially ejected from the socket. Finally grab the card and gently pull to remove it. See the following pictures for proper micro-SD removal:

To remove the microSD card, gently push it into the socket again until it “clicks”, and then release your figure.



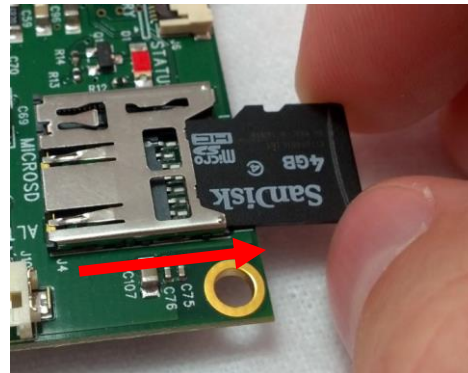
At this point, the microSD card should partially stick out of the socket.



Carefully grab the edges or sides of the microSD card and gently pull it out.

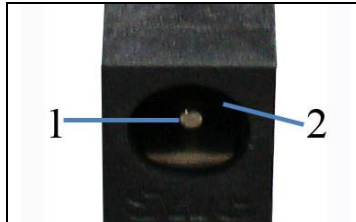


At this point the microSD card is fully removed from the socket.



DC Power Input – P1 (not loaded by default)

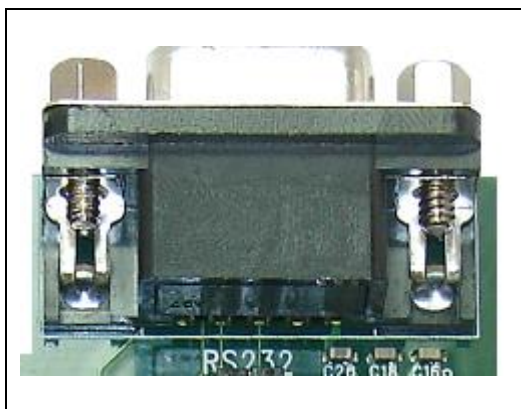
The uEZGUI-EXP-BRKOUT supports a 5VDC 1A (min) Power Supply. The connector is 2.1mm with center positive.

	Pin Number	Description
	1	5VDC, +/- 10%, 1.0A (min)
	2	Power Supply Ground

RS232 – P2 (not loaded by default)

The uEZGUI-EXP-BRKOUT Board includes one female DB9 Serial Port Connector for RS232.

The serial port may also be optionally configured to support ISP programming of the LPCXXXX using Flash Magic Software. To enable ISP programming, jumper JP6 & JP7 must be loaded, along with the ISP control circuitry. Note that with these jumpers loaded, operation of the LPCXXXX may be affected by the RS232 interface signals. Refer to the Flash Magic user manual for details. The ISP programming mode only applies to NXP LPC based uEZGUI units.

	Pin Number	Description
	1	No Connect
	2	TXD (Output)
	3	RXD (Input)
	4	Optional RESET input
	5	Signal Ground
	6	No Connect
	7	Optional ISP Entry
	8	No Connect
	9	No Connect

Expansion Connectors J1 & J2

The uEZGUI-EXP-BRKOUT includes 50 pin and 20 pin FFC Expansion Connectors that connect to the host uEZGUI. The table below details which pins are used on the EXP-BRKOUT and what they are used for on the EXP-BRKOUT. All of these pins are brought out to the standard 1/8" header breakout on the EXP-BRKOUT for ease of connecting additional hardware.

J1/J3 Connectors 50 pin

Pin	Function used on EXP-BRKOUT	Pin	Function used on EXP-BRKOUT
1	Ground	2	Expansion pin not used by EXP-BRKOUT
3	Expansion pin not used by EXP-BRKOUT	4	High Speed microSD card CMD
5	High Speed microSD card CLK	6	Expansion pin not used by EXP-BRKOUT
7	Expansion pin not used by EXP-BRKOUT	8	Expansion pin not used by EXP-BRKOUT
9	Expansion pin not used by EXP-BRKOUT	10	Ground
11	Expansion pin not used by EXP-BRKOUT	12	Expansion pin not used by EXP-BRKOUT
13	Expansion pin not used by EXP-BRKOUT	14	Expansion pin not used by EXP-BRKOUT
15	Expansion pin not used by EXP-BRKOUT	16	Expansion pin not used by EXP-BRKOUT
17	Expansion pin not used by EXP-BRKOUT	18	Expansion pin not used by EXP-BRKOUT
19	Expansion pin not used by EXP-BRKOUT	20	Expansion pin not used by EXP-BRKOUT
21	Expansion pin not used by EXP-BRKOUT	22	Ground
23	Reset switch/ISP reset input into host uEZGUI	24	Reset output from μC on uEZGUI
25	Expansion pin not used by EXP-BRKOUT	26	Expansion pin not used by EXP-BRKOUT
27	Expansion pin not used by EXP-BRKOUT	28	Expansion pin not used by EXP-BRKOUT
29	Ground	30	Expansion pin not used by EXP-BRKOUT
31	Expansion pin not used by EXP-BRKOUT	32	3.3V power from uEZGUI host unit's PSU
33	Expansion pin not used by EXP-BRKOUT	34	Expansion pin not used by EXP-BRKOUT
35	Expansion pin not used by EXP-BRKOUT	36	Expansion pin not used by EXP-BRKOUT
37	Expansion pin not used by EXP-BRKOUT	38	Expansion pin not used by EXP-BRKOUT
39	Ground	40	Used for optional ISP Entry to NXP uEZGUIs
41	RS232 Port RX	42	RS232 Port TX
43	USB Host/Device DP	44	USB Host/Device DM
45	USB Host/Device VBUS 5V	46	5V power supply to host uEZGUI unit
47	5V power supply to host uEZGUI unit	48	5V power supply to host uEZGUI unit
49	3.3V power from uEZGUI host unit's PSU	50	3.3V power from uEZGUI host unit's PSU

J2/J4 Connectors 20 pin

1	Ground	2	Expansion pin not used by EXP-BRKOUT
3	Expansion pin not used by EXP-BRKOUT	4	Expansion pin not used by EXP-BRKOUT
5	High Speed SD card DAT3	6	High Speed SD card DAT2
7	High Speed SD card DAT1	8	High Speed SD card DAT0
9	Expansion pin not used by EXP-BRKOUT	10	Expansion pin not used by EXP-BRKOUT
11	Expansion pin not used by EXP-BRKOUT	12	Expansion pin not used by EXP-BRKOUT
13	5V power supply to host uEZGUI unit	14	Ground
15	Expansion pin not used by EXP-BRKOUT	16	Expansion pin not used by EXP-BRKOUT
17	Expansion pin not used by EXP-BRKOUT	18	Expansion pin not used by EXP-BRKOUT
19	Expansion pin not used by EXP-BRKOUT	20	Ground

9. Expansion Board Top Level Mechanical Diagram / Board Layout

The uEZGUI-EXP-BRKOUT has 4 screw mounts that accept #6 size screws. The total board dimensions are 4.5" x 1.75". Each of the 4 corner screw mounts is centered 0.2" away from each side of the board.

Below is the top level mechanical drawing of the uEZGUI-EXP-BRKOUT showing all of the part positions and silk screen:

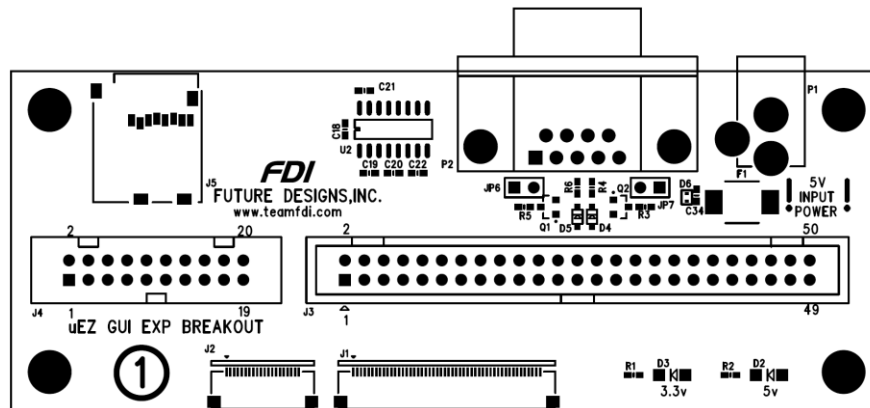


Figure 2 –Mechanical Dimensions (Component View)

10. Additional Documentation, Schematics, and Software Updates

Complete Users Manuals, Schematics, Software updates, and documentation are available from the following websites (please refer to the websites for the latest updates):

- <http://www.uEZGUI.com/uEZGUI-EXP-BRKOUT>
- <http://sourceforge.net/projects/uez/>

11. Useful links

- Segger Mini-JTAG Debugger
 - <http://www.segger.com/cms/jlink-software.html>
- Rowley Crossworks IDE download for 30-day evaluation
 - <http://www.rowley.co.uk>
- uEZ software quick start guide
 - <http://www.teamfdi.com/development-tools-kits/uez.php>